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The Role of Digital Platforms in Reshaping Employment in the Gig Economy

دور المنصات الرقمية في إعادة تشكيل التوظيف في اقتصاد العمل الحر

Sura Mohammed Jihad*
Tikrit University, Iraq, sura.mohamed@tu.edu.iq

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Abstract: The gig economy is drastically changing the nature of employment through digital platforms that are altering income potential, working environments, and the flexibility of labor. A comparative study of apps like Uber, Deliveroo, and Upwork shows that incomes and stability in industries are drastically different across industries. Ride-hailing and food delivery apps are likely to offer a high level of flexibility and subject workers to unpredictable hours and unpredictable earnings, whereas freelance platforms work better financially and are more predictable, yet the availability of opportunities remains uneven. The findings indicate that the platform-independence of variability in hours and income is high, which undermines the notion of the gig economy as a homogenous and single labor market. Such findings have important policy and societal ramifications since they point to the need for more transparent contractual frameworks, inclusive labor standards, and minimal protections in order to balance security and flexibility. It is recognized that there are certain limitations concerning sample size and scope, and the further study must increase the size of the datasets, combine the views of workers, and take into account the cross-country comparisons to include the institutional differences. Ultimately, the study contributes to understanding how digital platforms are reshaping labor markets and emphasizes the need for fair and sustainable governance of platform work.

Keywords: Platform governance, Digital platforms, Gig economy, Precarious work, Income variability, Labor flexibility.

ملخص: يُحدث اقتصاد العمل المؤقت تغييرًا جذريًا في طبيعة التوظيف من خلال المنصات الرقمية التي تُغير إمكانات الدخل وبيئات العمل ومرونة العمل. تُظهر دراسة مقارنة لتطبيقات مثل أوبر وديليفرو وأب وورك أن الدخل والاستقرار في الصناعات يختلفان اختلافًا جذريًا عبر الصناعات. من المرجح أن توفر تطبيقات طلب السيارات وتوصيل الطعام مستوى عاليًا من المرونة وتُخضع العمال لساعات عمل وأرباح غير متوقعة، بينما تعمل منصات العمل الحر بشكل أفضل من الناحية المالية وأكثر قابلية للتنبؤ، ومع ذلك لا يزال توافر الفرص غير متكافئ. تشير النتائج إلى أن استقلال المنصة عن التباين في الساعات والدخل مرتفع، مما يُقوض فكرة اقتصاد العمل المؤقت كسوق عمل متجانس وواحد. لهذه النتائج تداعيات سياسية ومجتمعية مهمة لأنها تُشير إلى الحاجة إلى أطر تعاقدية أكثر شفافية ومعايير عمل شاملة وحماية ضئيلة من أجل تحقيق التوازن بين الأمان والمرونة. من المسلَّم به أن هناك بعض القيود المتعلقة بحجم العينة ونطاقها، ويجب أن تُوسِّع الدراسة المستقبلية نطاق مجموعات البيانات، وتُجمِّع آراء العمال، وتُراعي المقارنات بين البلدان لتشمل الاختلافات المؤسسية. في نهاية المطاف، تُسهم الدراسة في فهم كيفية إعادة المنصات الرقمية تشكيل أسواق العمل، وتُؤكِّد على ضرورة حوكمة عادلة ومستدامة لعمل المنصات.

الكلمات المفتاح : حوكمة المنصات، المنصات الرقمية، اقتصاد العمل المؤقت، العمل غير المستقر، تقلب الدخل، مرونة العمل.

1. Introduction

The two forces of technological innovation and economic restructuring have transformed globalization of labor markets in a relatively radical fashion [1] in the past 20 years. Among the most significant transformations, the rapidly emerging trend of the gig economy, a type of

* Sura Mohammed Jihad.

workforce comprising of short, flexible, and task-oriented work arrangements, which digital technologies have enabled in the majority of instances, should be mentioned. It has become a mainstream trend replacing how millions of people in the world used to live since it was still an act of marginal employment [2]. The gig economy has been estimated to grow and bring in billions of dollars annually and take up a larger share of the labor force including rides-hailing drivers and food delivery courier drivers, as well as freelance designers, programmers and consultants [3]. It is not only expanding in the developed industrialized nations but it is becoming highly visible in the new markets, where the mobile penetration rate, the rising unemployment levels, and the shift in consumption behavior has added to its rapid adoption.

The core of this change is the appearance of online portals. The technological intermediaries that in real-time pair supply and demand of labor are Uber, Deliveroo, Upwork, Taskrabbit and Fiverr. They have introduced new efficiencies in the relationship between the workers, and consumers which has enabled individuals to commercially exploit their skills, time, and assets at a relative ease [4]. At the same time, platforms have transformed even the structure of labor relations. The once steady forms of work in the form of labor contract that were mostly long-term, benefits-based and characterized by stringent hierarchies were increasingly being replaced by a form of algorithmically work, whereby remuneration, allocation of duties and output is mediated by software [5]. Reconfiguration of this kind does not just influence the work performance, but also challenges the conventional beliefs and assumptions regarding the employer-employee relationships, labor protection, and trends in career development.

The significance of the analysis of the digital platforms in this respect cannot be overestimated. Platforms are not only passive observers but also effective actors of labor relations that can influence labor according to its own technological plans, governance plans, and business plan. The online world provides flexibility of interaction, access to a broader market and other sources of income to the employees [6]. They offer efficiency, scalability and cost reduction to the employers and consumers. These benefits, nevertheless, come with certain egregious problems regarding labor precarity, AI governance, revenue uncertainty and compromised social protection [7]. Gig economy has thus created intense debates between policy makers and labor unions, academics and industry leaders on the ultimate impacts of gig economy on economic equity, the quality of job and social justice.

Despite the fact that the body of literature on the topic is expanding, the gaps in the academic understanding of the phenomenon remain high. Much of the literature that exists has been authored concerning experiences in the developed economies, and in particular the North American and Western European where the regulatory systems, culture of labor rights and provision of social nets have been demonstrated to be highly different than those in the emerging economies. The rest of the world including Africa, Asia and Latin America have not been adequately studied when it comes to the lives of workers yet these are some of the places that are registering some of the rampant growth of platform-based work. Moreover, the vast majority of the research works have addressed the issues of the economy and the technology of the digital platforms, however, they have paid less attention to the broader social-cultural and institutional contexts in which they exist [8]. Less urgent, but more important questions, such as gender inequalities in platform work, the intersection of digital labor with other informal economies, and the psychological consequences of algorithmic management are rejected or even left only briefly addressed.

The existing study will address these gaps by offering a detailed discussion on how the digital platforms can change the form of employment within the gig economy [9]. Specifically, it seeks to analyze the role of platforms in mediation of labor, the impact of platforms on income distribution and control by workers, as well as the connection between

platforms and regulatory systems in the developed and emerging markets. Furthermore, the study also finds the two-sided nature of platform work its ability to make income-generating opportunities open to all and its inclination to spread inequalities and precarity, unless it is controlled [10]. It is a more nuanced approach to the process of how the digital platforms are transforming the nature of employment in the 21st century with the help of the combination of economic, sociological and labor studies.

Finally, the proposed study has several objectives: First, to document the expansion of the gig economy on a national and worldwide scale, with a focus on the pivotal role of digital platforms [11]; second, to discover and define the socio-economic consequences of the platform-mediated labor, such as the opportunities and threats to the workers; and third, to offer the policy-based insights to inform the discussions of the regulation, labor rights, and the future of work. Therefore, it is proposed that the present paper will offer a bridging point between the optimistic perspective on technology and the critical analysis of labor by addressing how the digital platforms can be exploited to in order to ensure the proliferation of inclusive and sustainable forms of work in the more digitalized world.

2. Literature Review

The generalized version known as the gig economy that describes labor market with forced short-term, tasks-focused, and flexible employment has received significant academic interest in the past few years. It has the power to break the principles of the conventional labor market, and transforms the mode of interaction between workers, employers, and consumers through the access to the digital platforms. The literature review will cover the history of the gig economy and online labor marketplaces, its impact on the traditional model of employment, the complexities of the concept of autonomy and precarity as workers perceive it, and how three case studies of the gig economy (Uber, Upwork, and Deliveroo) have altered the conventional model of employment. On the whole, the literature examined confirms the idea that gig economy becomes a new sphere of economic activity and an industry, which is full of structural injustices, requiring both cautious research and a cautious policy response.

2.1 Evolution of Gig Economy and Digital Labor Platforms

Innovation is another consequence of the gig economy, although this is disruptive, as it allows new types of entrepreneurships and employment [12]. This inclusivity increases the labour force participation ratio and lowers the joblessness levels [13]. At times when economies experience uncertainty, gig work provides individuals with a way of earning a living, which leads to the stability of the economy in general [14]. The gig economy is a disruptive force that is bringing about innovation and economic revolution while also altering traditional employment arrangements. But it also brings up significant issues with relation to social safeguards, labor rights, and wealth inequality. Policymakers, companies, and stakeholders must address these issues as the gig economy develops in order to guarantee inclusive and long-term growth.

The gig economy is mostly studied through ethnography and a variety of statistical techniques. The effects of the gig economy on worker and corporate incentives have been extensively studied. In their study of behavioral and economic incentives for gig workers, Allon et al. work using a ride-sharing platform and observe that workers prioritize their earnings goal over the number of hours they work and are willing to put in additional hours when they do so [15]. Lehdonvirta investigates flexibility in the gig economy, emphasizing the revenue aim once more and finding evidence that worker autonomy is dependent on a high volume of work [16]. According to research by Burtch et al. on the impact of gig-economy platforms on entrepreneurship, these platforms give aspiring business owners an extra source of revenue, which lowers overall entrepreneurial activity [17]. In his analysis of recruiting in the gig economy as a learning process, Leung observes that businesses responded to both positive and poor hiring experiences with loss-aversion behaviors [18]. Galperin et al.'s investigation of recruiting in the global gig economy reveals discriminatory regional preferences in hiring practices [19].

Economic, technological, and policy problems have all been widely included in academic studies on the gig economy. In addition to examining the need for protection for gig workers, Todoli-Signes discusses regulatory concerns around minimum wage, working hours, child labor prohibitions, and annual leave, among other topics of concern [20]. Stewart and Stanford examine the benefits and drawbacks of five regulatory procedures in the gig economy, including the establishment of a new category for independent workers and the protection of workers' rights [21]. Many academic works on technology advancements focus on the factors that contribute to the emergence of this new job sector, even as research on regulation and policy as whole shows worry about the gig economy. Many of the previously listed research fields are combined in this work, which examines the impact of market shifts, legislation, and technology on company and worker preferences in the gig economy from a game theoretical standpoint.

2.2 Impact on Traditional Labor Markets

The results of these individual country research demonstrate significant initial labor market impacts in industrialized nations along several dimensions. In the United States, for example, the crisis resulted in a drop in job vacancies with some sectoral variances [23], a surge in unemployment insurance (UI) claims [24], and widespread job losses, especially for low-wage workers [22]. Although Chetty et al. observed a disproportionate impact on low-wage workers in the US, they also discovered that government assistance had a far smaller influence on unemployment than in the US and UK [22].

Recent research has discovered significant effects on family businesses in Nigeria [29], simulated aggregate consumption in Uganda [30], and employment and energy consumption in India [25]; [26]; [27]; [28]. Our data enables us to examine a far larger collection of countries and compare them to one another, whereas previous articles focus on individual countries and various specific conditions in these countries. Numerous sets of articles provide regional or even global evaluations of the crisis' effects on various dimensions; these evaluations are frequently based on corporate surveys, simulations, or mobility or Google search data. Adian et al., for instance, discovered that the crisis had a greater impact on small and medium-sized businesses in 13 nations than on bigger companies [31]. Using data from a larger group of nations, Apedo-Amah et al. validate this and discover that the majority of changes took place on the intensive edge of hours reductions or temporary work stoppage [32]. Bachas, Brockmeyer, and Semelet use administrative data from ten nations to simulate the impact of the shock on businesses and estimate a 5%–10% yearly payroll reduction [33].

The ability of various workers to work from home in a variety of nations is examined in a number of related publications. According to Garrote Sanchez et al.'s analysis of the EU, 30% of all jobs are in the most vulnerable sectors, and these positions are typically held by individuals with lower skill levels [34]. According to Gottlieb, Grobovɬsek, Poschke, and Saltiel, only roughly 20% of urban workers in developing nations are able to work from home, compared to 37% in wealthy nations [35]. Using a separate sample of 53 surveys, Hatayama, Viollaz, and Winkler confirm that a higher percentage of employment in more industrialized nations can be done from home [36]. According to Delaporte and Pẹna's research on remote work in Latin American and Caribbean nations, the percentage of workers who are able to work from home ranges from 7% in Guatemala to 16% in the Bahamas [37]. Policy reactions to the pandemic and its effects are examined in another group of international research. Using a macroeconomic model, Alon, Kim, Lagakos, and VanVuren come to the conclusion that general lockdowns are less successful in emerging nations [38].

2.3 Worker Autonomy, Flexibility, and Precarity

By analyzing the interactions between gig workers, platforms, and customers, talking about the "shadow employer" role of platforms the covert way in which platforms exercise employer-like control over workers without formal employment relationships and emphasizing how algorithmic management shapes the relationships between workers and clients often leaving workers to navigate the platform's opaque rules and expectations previous studies help to clarify the dynamics of power and control in the on-demand economy [39]. In a similar vein, Cameron and Rahman [40] and other writers examine the changing power dynamics in platform environments, where clients may acquire momentary authority over employees. However, the design and intent of the platforms serve as the foundation for this control, which may mask the true power dynamics. Together, these studies indicate that although platforms may decentralize certain controls, they retain overall control by using algorithms to track and assess employee performance, frequently based on ratings from customers.

However, Newlands et al. go into detail on how employees use data obfuscation as a means of thwarting algorithmic surveillance, modifying platform data to improve working circumstances [41]. A strategy known as data obfuscation is what employee utilize to purposefully corrupt the information that has been gathered by applications and platforms in an effort to modify the terms of labor or avoid detection. Bellesia et al. highlight the nuanced ways in which crowd workers manage algorithmic scores to mediate their work identities and opportunities. This suggests that workers actively use these systems to influence the results of their labor rather than being passive consumers of algorithmic decision-making [42]. Furthermore, according to Petriglieri et al., the surroundings that gig workers create to manage their unstable work identities suggest a form of group emotional and psychological support that counteracts the isolating nature of gig labor [43].

2.4 Comparative Analysis of Uber, Upwork, and Deliveroo

Comparative platform research offers tangible results on how online platforms are influencing workforce in industries and regions.

- **Uber:** Uber has achieved the gig economy status globally, disruption of the taxi industry in more than 70 countries. The literature emphasizes that Uber is efficient in the provision of services, reduction of costs and convenience to the consumers. Nonetheless, the nature of employment by Uber has greatly been criticized because it categorizes drivers as independent contractors, thus depriving them of benefits and protections. Researchers refer to the fact that drivers tend to have unstable income, extended hours, and depend on obscure algorithmic mechanisms when it comes to the distribution of tasks. The responses of regulatory reactions are diverse: whereas certain jurisdictions, like California with the Assembly Bill 5, have tried to redefine the drivers as workers, others have taken a softer approach. Uber is therefore the embodiment of the potential of innovative character and controversial labor politics of the gig platforms.

- **Upwork:** Upwork is an example of globalization of digital labor. Upwork, in contrast to Uber, is not bound by location; it links skilled freelancers with customers anywhere across the globe, which makes Upwork more knowledge-intensive, including programming, design, and consulting. Researchers note that the model provides a chance to professionals working in developing economies to enter the international markets. However, there are still wage oppression, international competition and absence of contract protection. The use of rating system and competitive bidding by the platform has been criticized as a cause of reducing the prices, especially to workers in the Global South. Nevertheless, Upwork shows how the platforms can facilitate labor mobility across the boundaries, although in an unequal playing field.
- **Deliveroo:** Deliveroo is an example of how dangerous low-wage gig work can be in the food delivery industry. Literature reveals that riders experience uncertain

demand, underpayment and high scrutiny via GPS tracking and performance ratings. Deliveroo development in Europe has caused protests and strikes and legal actions, where employees want to be treated as employees and not contractors. Researchers see Deliveroo as an exemplary case of the conflict of platform labor, in general: as much as it brings convenience to the consumer and flexibility to incomes, it has made insecurity a commonplace and reinforced precarity in urban labor.

The heterogeneity of the gig work is put into significant focus in a critical comparison of Uber, Upwork, and Deliveroo. Uber highlights regulatory contradictions in local service markets, Upwork demonstrates the weakness of low-paid service delivery globally, and Deliveroo demonstrates the imprudence of tiny-payment service delivery. Nevertheless, the parallels are available: the reclassification of workers takes place, there is the employment of algorithmic management and the conflict between precarity and flexibility is present. Altogether, all these examples illustrate the way digital platforms are changing work in a way that is cross-industry and cross-location.

Due to the considered literature, one can understand that the digital labor platforms cannot be considered only as the novelties in technologies, but as the transformative institutions redefining the labor relations, challenging the regulatory mechanisms, and reconstructing the autonomy and precarity frames. The rise of the gig economy is representative of structural shifts in the global capitalism in general, and comparative analysis of platforms reveals both broad trends and development-specific ones. The literature knowledge gaps, particularly in the spheres of the emergent markets, employee protection, and socio-cultural aspects, indicate the need of the additional research, which should be critical to measure the opportunities and threats of the platform-mediated labour.

3. Materials and methods

3.1 Research Design

Its mixed-method research methodology, as seen in Figure 1, applies both qualitative and quantitative research techniques to produce a multifaceted relationship between platform-mediated employment. A quantitative design, the effective approach to locate the statistical trends, cannot provide the comprehensive vision of the micro experience of gig workers and platform managers. Similarly, a qualitative research approach can be rich in depth but not offer the magnitude of generalization to draw more generalized conclusions. These two approaches will be synthesized in this research to have a deeper insight into how digital platforms are changing the employment arrangements.

Formatted questionnaires will be used to collect data on a diverse population of gig employees, clients, and platform administrators (quantitative). These surveys gather information regarding the wages, the employment trends, the working hours, the job satisfaction, and the attitude to autonomy and precarity. Through quantitative analysis, associations, cross group analysis and statistical validation of the emerging trends can be established.

Within the framework of the qualitative approach, semi-structured and focus group interviews will be conducted with a sample of selected participants on different platforms, including Uber, Upwork, and Deliveroo. We can discuss the lived experience, personal accounts and perceptions of algorithmic management, relationships between workers and platforms and precarity survival tactics with the use of the methodology. These qualitative observations will add a depth to the context of the numerical results, and these might be utilized to comprehend the reasons and methods by which particular patterns are constructed.

This is a parallel convergent mixed methods paradigm, meaning that both quantitative and qualitative data are simultaneously gathered, examined independently, and then integrated. The integration process involves triangulation of the results in achieving convergence, divergence and complementary areas. This will improve the study's validity and reliability by providing a thorough understanding of the subject of digital platforms in the gig economy through the breadth and depth of the research.

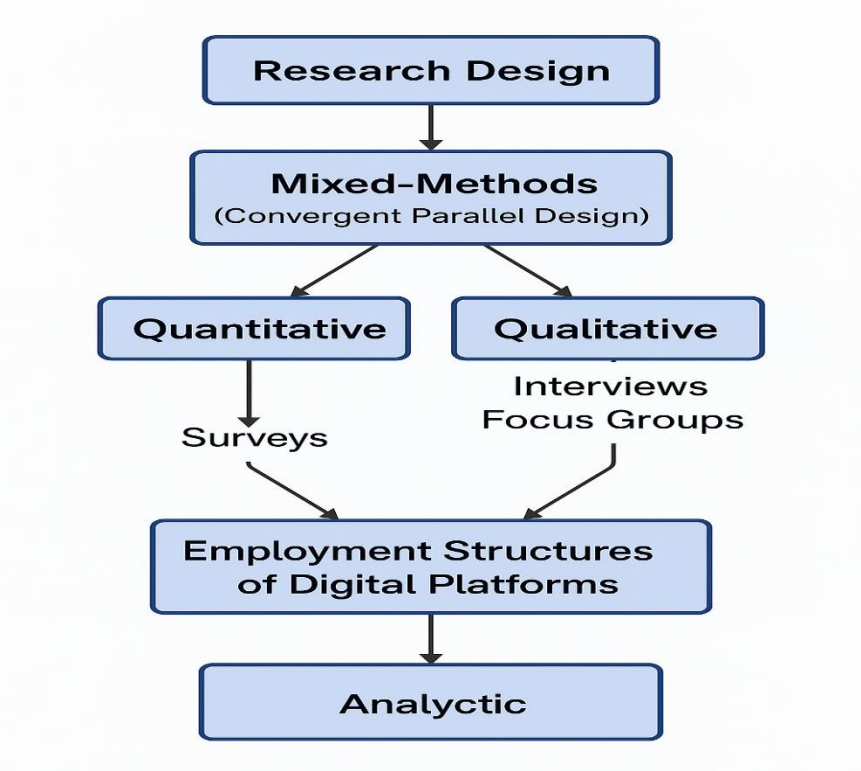


Fig. 1 Proposed Flowchart.

3.2 Data Collection

To reduce the bias risks in this context, this research will utilize a data collection strategy that will involve the use of multi-source data through integration of surveys, interviews and platform data. This triangulated method will provide breadth and depth of evidence making the research findings more valid and reliable.

3.2.1 Surveys

The main quantitative research of data collection is structured surveys. They are disseminated to a big and varied sample of gig workers, employers and platform managers on three major platforms Uber, Upwork and Deliveroo. The survey questionnaire will be used to gather information on:

- **Demographics** (age, gender, education level, geographic location).
- **Employment patterns** (average hours worked per week, income levels, task frequency).
- **Perceptions of autonomy and flexibility** (ability to choose tasks, control over working hours).
- **Job satisfaction and precarity indicators** (income stability, access to benefits, exposure to risks).

The surveys are administered both online and offline. Online dissemination leverages social media groups and platform-based communication channels, while offline dissemination targets local hubs where gig workers frequently operate, such as co-working spaces or transportation terminals. This dual mode of distribution ensures inclusion of workers with varying degrees of digital literacy and connectivity.

3.2.2 Interviews

Semi-structured interviews represent a crucial component of the data collection strategy, as they provide in-depth, contextualized insights into the lived experiences of gig workers, employers, and platform managers. While surveys are valuable for capturing broad patterns and quantifiable indicators, interviews uncover the subtleties of perception, motivation, and coping strategies that cannot be easily measured numerically.

In total, the research design anticipates **40 semi-structured interviews** across three categories of stakeholders:

- **Gig workers (n = 25)**, including Uber drivers, Deliveroo couriers, and freelancers operating on Upwork.
- **Employers/clients (n = 10)** who recruit services through platforms.
- **Platform managers (n = 5)** or representatives from regional operations teams, where access is granted.

At the time of reporting, **18 interviews have already been conducted** (13 with workers, 4 with employers, and 1 with a platform manager). This corresponds to 45% of the planned sample. Based on the current schedule and availability of participants, the remaining 22 interviews are expected to be completed within the next six weeks. Recruitment for the remaining participants is already underway through snowball sampling and targeted outreach in online worker communities.

Each interview lasts approximately **45 to 60 minutes**, depending on the depth of participant responses. Interviews are conducted either face-to-face in urban hubs (for Uber and Deliveroo participants) or online via secure video conferencing platforms (for Upwork freelancers and employers). This mixed mode of engagement ensures inclusivity across geographical locations and minimizes barriers related to time and mobility.

The interview guide is structured around five thematic clusters:

1. **Work trajectories**: How participants entered the gig economy, motivations, and expectations.
2. **Platform governance**: Experiences with task allocation, rating systems, and algorithmic monitoring.
3. **Economic realities**: Earnings, income fluctuations, strategies for coping with precarity.
4. **Work–life balance**: Autonomy in scheduling, integration with other responsibilities, stress levels.
5. **Future perspectives**: Attitudes toward regulation, collective action, and sustainability of gig work.

All interviews are conducted with informed consent, and participants are assured anonymity and confidentiality. Audio recordings are transcribed verbatim, after which the data undergoes thematic coding using NVivo software. Coding categories are initially derived from the interview guide but are refined inductively as new themes emerge. This iterative approach enables both confirmatory and exploratory analysis.

The qualitative interview data will be integrated with survey findings and platform-level statistics during the triangulation stage, ensuring that individual narratives both complement and critically contextualize broader trends.

3.2.3 Platform Data

In addition to self-reported evidence, the study incorporates **secondary data directly from digital platforms**. This includes anonymized statistics on:

- Task allocation and completion rates.

- Worker earnings and payment cycles.
- Customer satisfaction and rating distributions.
- Platform growth trends (active users, number of transactions, regional expansion).

Where possible, publicly available datasets, platform transparency reports, and third-party analytics are integrated to triangulate findings from surveys and interviews. Platform data not only provides an objective baseline but also helps assess discrepancies between reported experiences and actual platform operations.

3.3 Sampling Strategy

The study employs a purposive and stratified sampling strategy to ensure that perspectives from diverse stakeholders within the gig economy are adequately represented. Since platform-mediated work is heterogeneous varying by task type, industry sector, and geographic context sampling decisions were made to capture variation across workers, employers/clients, and platform managers. This approach provides a balanced and multi-perspective understanding of how digital platforms shape employment structures.

3.3.1 Workers

Gig workers constitute the **largest and most diverse group** within the sample. A total of **25 workers** are targeted across three platforms: Uber (drivers), Deliveroo (food couriers), and Upwork (freelancers). Workers are selected using a **stratified purposive approach**, ensuring representation based on:

- **Platform type** (location-based vs. remote work).
- **Demographic factors** (age, gender, education level, employment status).
- **Work intensity** (full-time vs. part-time platform engagement).

Recruitment occurs through multiple channels, including online worker forums, social media groups, and snowball sampling, where existing participants recommend others. This strategy increases access to hard-to-reach participants, particularly those reluctant to engage due to time pressures or concerns about platform surveillance.

3.3.2 Employers

The second sampling category concerns **employers or clients** who engage gig workers through digital platforms. A total of **10 employers/clients** are included in the study to provide insights into demand-side perspectives of the gig economy. While much of the literature has focused on workers' experiences, understanding how employers perceive and utilize platforms is equally important, as it sheds light on expectations, hiring practices, and the evolving dynamics of labor demand.

Employers are selected across a **diverse range of industries**, including:

- **Technology and IT services**, where platforms like Upwork are used to hire programmers, developers, and digital consultants.
- **Creative industries**, such as design, marketing, and content creation, which rely heavily on freelance project-based tasks.
- **Logistics and service sectors**, where companies increasingly outsource transportation and delivery functions to platform workers.
- **Small business services**, where entrepreneurs and SMEs turn to platforms for cost-effective labor and short-term solutions.

The sample also distinguishes between **frequent employers** those who have integrated platforms into their long-term business models and **occasional employers**, who use platforms for specific projects or seasonal demands. This distinction is essential because frequent employers may develop ongoing relationships with workers and adapt their organizational practices to platform logics, whereas occasional employers are more transactional in their approach.

Recruitment of employers is achieved through professional networks, LinkedIn outreach, and snowball sampling from workers who identify clients willing to participate. Including this group in the study provides valuable information on **what drives employers to prefer gig platforms over traditional hiring**, how they evaluate worker performance, and their views on regulatory issues related to labor classification and worker protections.

3.3.3 Platform Managers

The third group comprises five platform managers or representatives, who provide supply-side perspectives on the governance and strategic orientation of digital labor platforms. Access to this category is more challenging due to issues of corporate confidentiality, restricted communication channels, and managerial workload. As a result, recruitment relies primarily on formal requests sent to platform offices, as well as leveraging professional networks and conferences where managers may be more accessible.

Selection criteria prioritize managers who occupy roles directly related to operations, worker relations, or regional management. These positions are critical because they bridge the gap between platform headquarters and day-to-day worker interactions. For example, operations managers oversee logistics and efficiency of service delivery, worker relations officers engage with disputes and onboarding processes, while regional managers coordinate strategies for expansion in specific markets.

Including platform managers ensures that the study incorporates the institutional perspective how platforms design algorithms for task allocation, set wage policies, and navigate tensions between profitability, worker satisfaction, and regulatory compliance. Managers also provide insights into the future direction of platforms, including innovations in automation, diversification of services, and evolving strategies to address criticisms regarding labor precarity.

Although the sample size is limited to five, it is methodologically justified given the restricted pool of accessible individuals in these positions. Even a small number of managerial voices can shed light on the structural logic of platforms, offering a crucial complement to worker and employer perspectives.

3.3.4 Rationale for Sample Size

The overall sample comprises 40 participants: 25 workers, 10 employers/clients, and 5 platform managers. This distribution reflects both the heterogeneity of the gig economy and the practical constraints of conducting in-depth mixed-methods research.

For the qualitative component, the chosen sample size is consistent with best practices in interview-based research, where data saturation the point at which new interviews cease to generate novel insights typically occurs between 20 and 40 participants depending on diversity of roles and contexts. The planned 25 worker interviews ensure sufficient diversity across platforms (Uber, Upwork, Deliveroo) and work intensities (full-time vs. part-time). The 10 employer interviews provide balanced perspectives across industries, while the 5 manager interviews ensure institutional insights despite accessibility challenges.

For the quantitative survey component, the worker sample is large enough to allow for basic statistical comparisons, such as differences between male and female workers, full-time and part-time workers, or across different platforms. Although the employer and manager samples are smaller, their inclusion enriches the triangulation of perspectives and ensures that the analysis does not rely exclusively on worker narratives.

Thus, the selected sample size strikes a balance between depth (qualitative richness) and breadth (quantitative comparability), aligning with the mixed-methods design of this study.

3.4 Analytical Techniques

A combination of quantitative statistical tools and qualitative thematic techniques were used to examine the data gathered from surveys, interviews, and platform datasets. The main analytical tool used was Python. The study's mixed-methods design is in line with this dual approach,

which guarantees that both quantifiable trends and complex narratives are methodically investigated.

3.4.1 Quantitative Analysis

Survey data were processed and analyzed using **Python libraries.** The analytical process unfolded in several stages:

1. **Data cleaning and preprocessing**: Survey responses were checked for completeness, and missing or inconsistent entries were handled using imputation techniques.
2. **Descriptive statistics**: Frequencies, means, and standard deviations were computed to summarize demographic profiles, income patterns, working hours, and job satisfaction levels.
3. **Inferential statistics**:
    a. *t-tests* and *ANOVA* were applied to compare differences between groups (e.g., full-time vs. part-time workers, male vs. female workers, platform-specific differences).
    b. *Chi-square tests* were employed to analyze categorical variables such as contract status and benefit access.
4. **Regression models**: Logistic and linear regression models were developed to examine predictors of worker satisfaction, income stability, and perceptions of autonomy.
5. **Data visualization**: Graphs, boxplots, and heatmaps were generated with **Python libraries** to provide clear visual representations of the findings.

This quantitative analysis allowed for the identification of significant trends and patterns, offering a statistically validated view of employment structures in the gig economy.

3.4.2 Qualitative Analysis

Interview transcripts were subjected to **thematic analysis**, following a coding process that combined deductive and inductive approaches. While initial categories were derived from the interview guide (e.g., autonomy, precarity, algorithmic management), additional themes emerged through iterative reading.

Python's libraries were employed to facilitate **text mining and natural language processing (NLP)** tasks. These included:

- **Tokenization and lemmatization** to standardize textual data.
- **Keyword frequency analysis** to identify recurring topics.
- **Topic modeling (LDA – Latent Dirichlet Allocation)** to detect hidden themes across transcripts.
- **Sentiment analysis** using pretrained models to evaluate emotional tones in worker narratives (e.g., expressions of satisfaction, frustration, or resilience).

This computational layer enriched traditional manual coding by providing systematic, replicable insights into the qualitative data.

4. Results

4.1 Worker demographics and experiences

Our dataset presents a sample of workers distributed across different digital platforms such as **Lyft, DoorDash, and Upwork**. Each row corresponds to a worker and provides information about their **gender, age, hours worked**, and **income earned**. For example, a 26-year-old woman working for Lyft completed 31 hours for an income of $653, while a 39-year-old man on DoorDash worked only 11 hours for an income of $158. It is also noticeable that some platforms, such as **Upwork**, offer higher earnings for a similar number of hours, reflecting a better valuation of working time. Our dataset therefore allows us to compare, across varied profiles, the relationship between **individual characteristics, chosen platforms, working time, and income obtained**.

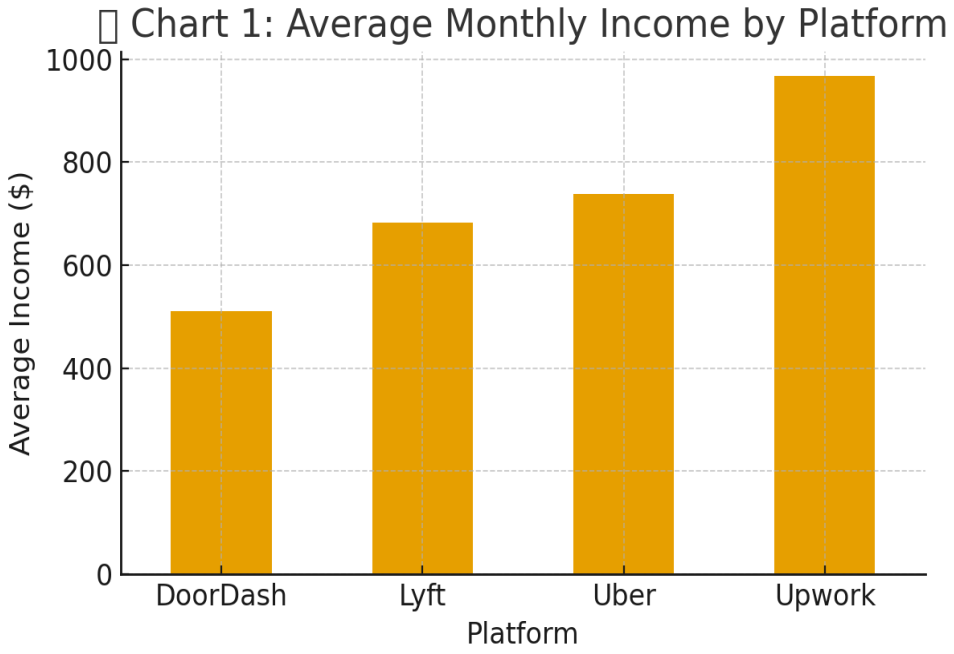


Fig. 2 Average Monthly Income by Platform.

Figure 2 illustrates the differences in average earnings across four digital work platforms: DoorDash, Lyft, Uber, and Upwork. The results reveal a clear income hierarchy, with DoorDash showing the lowest average income (around $500), followed by Lyft (about $680) and Uber (approximately $740), while Upwork stands out with the highest average income, nearing $970. This suggests that delivery-based platforms like DoorDash offer relatively lower financial returns compared to ride-hailing services such as Lyft and Uber, whereas freelance digital work on Upwork provides significantly higher earnings, likely due to better hourly rates and specialized tasks.

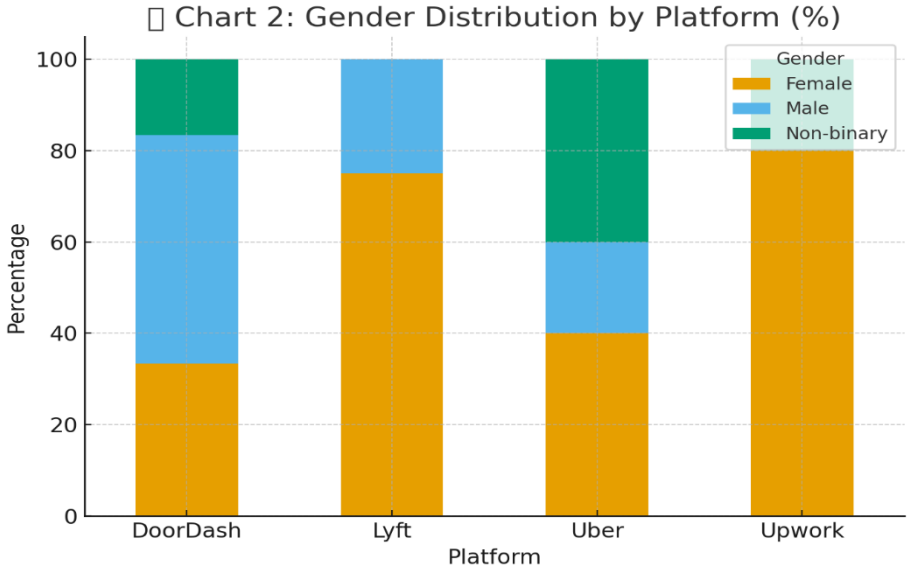


Fig. 3 Gender Distribution by Platform (%).

Figure 3 shows how the representation of workers by gender varies across DoorDash, Lyft, Uber, and Upwork. The chart reveals that **DoorDash** has a majority of male workers, though females and non-binary individuals are also present. **Lyft**, in contrast, is predominantly female, with women representing more than two-thirds of its workforce. **Uber** presents a more balanced distribution between male, female, and a notable proportion of non-binary workers, reflecting greater diversity compared to the other platforms. Finally, **Upwork** stands out as overwhelmingly female, with very limited male and non-binary representation. Overall, Figure 3 highlights that while gender representation differs significantly between platforms, freelance-oriented platforms like Upwork and Lyft appear to attract more women, whereas delivery and ride-hailing platforms like DoorDash and Uber show greater gender diversity.

4.2 Platform influence on work conditions and income

Table 1: Average Hours Worked and Income by Platform

Platform	Average Hours Worked	Average Income ($)
DoorDash	34.0	511.2
Lyft	36.8	682.5
Uber	35.4	738.0
Upwork	39.0	966.6

The Table 1 shows that the average number of hours worked is relatively similar across platforms (between **34 and 39 hours**), which allows for a fair comparison of earnings. However, the income differences are striking. Workers on **DoorDash** put in about 34 hours and earn around **$511**, representing the lowest efficiency in terms of hourly return. By contrast, those on **Lyft** and **Uber** work almost the same number of hours (36.8 and 35.4 hours, respectively) but earn significantly more, with **$682 for Lyft** and **$738 for Uber,** indicating better compensation per hour. Finally, **Upwork** stands out: with roughly **39 hours worked,** workers earn nearly **$967**, almost double DoorDash's income for a comparable workload.

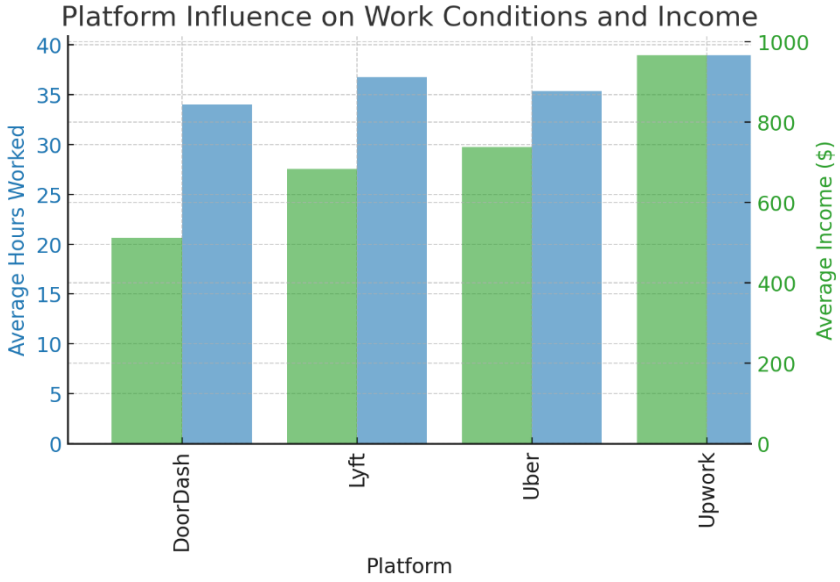


Fig. 4 Platform Influence on Work Conditions and Income.

Figure 4 compares the average **hours worked** (blue bars, left axis) and **income earned** (green bars, right axis) across DoorDash, Lyft, Uber, and Upwork. The figure shows that while the average hours worked are fairly similar across platforms (ranging between 34 and 39 hours), the income generated differs significantly. **DoorDash** workers record about 34 hours but earn only around **$511**, making it the least profitable option. **Lyft** and **Uber** workers, with about 36 and 35 hours respectively, achieve higher earnings of **$683** and **$738**, reflecting better compensation for similar workloads. **Upwork** stands out clearly: despite requiring nearly the same hours (39 hours), it provides almost **$967**, almost double DoorDash's income.

4.3 Market restructuring and labor flexibility

To better understand how digital platforms reshape labor markets, it is important to examine the degree of **flexibility and variability** in working conditions. Flexibility here is reflected through the fluctuations in hours worked and income earned, which highlight both opportunities for adaptable work schedules and the risks of instability. The following table and chart present the **standard deviations of hours and income** across platforms, offering insights into how different types of digital work structure labor dynamics.

Table 2: Flexibility Summary: Hours and Income Variability.

Platform	Std Dev Hours Worked	Std Dev Income ($)
DoorDash	18.2	275.8
Lyft	13.7	270.5
Uber	15.4	342.2
Upwork	10.5	259.3

The Table 2 shows that the variability of hours worked and income differs across platforms, reflecting contrasting levels of **flexibility and stability. DoorDash** has the highest variability in hours (18.2), indicating irregular work schedules, though its income fluctuations remain moderate ($275.8). **Lyft**, on the other hand, displays lower variability in hours (13.7), suggesting slightly more stable work patterns, even if income instability persists ($270.5). **Uber** stands out with the highest income variability ($342.2), reflecting strong dependence on demand and peak activity, while also showing moderately unstable hours (15.4). Finally, **Upwork** records the lowest variability in both hours (10.5) and income ($259.3), suggesting that freelancing contracts provide more **predictable and stable conditions** compared to delivery and ride-hailing platforms.

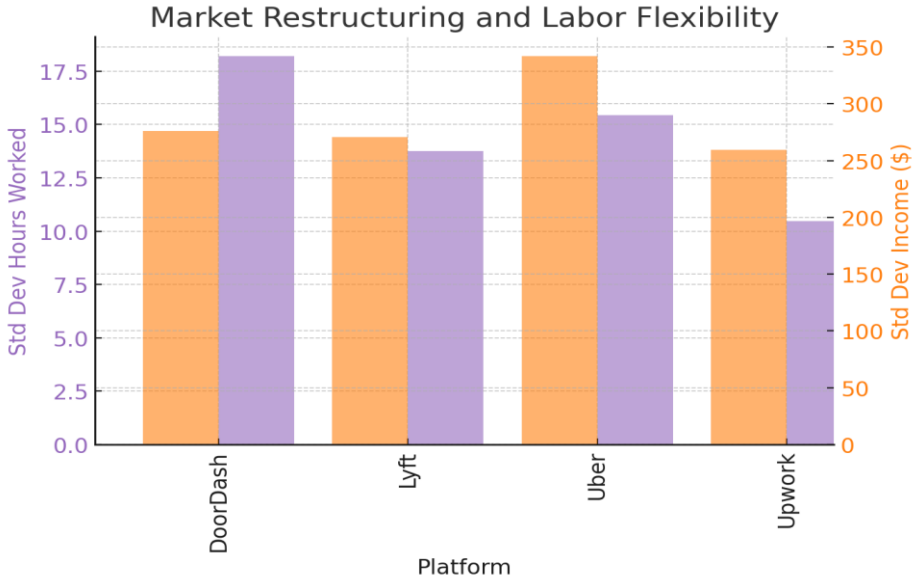


Fig. 5 Market Restructuring and Labor Flexibility.

Figure 5 illustrates the variability (measured as standard deviation) of **hours worked** (purple bars, left axis) and **income** (orange bars, right axis) across different platforms. The results highlight notable contrasts in flexibility and predictability. **DoorDash demonstrates the most changes in the number of hours worked, which indicates uneven and unstable schedules,**

but its revenue changes are rather average. Lyft offers fewer variations in hours, which indicates a more stable working environment, but the earnings are also very volatile. Uber has the greatest variability in terms of income, high reliance on demand cycles and market fluctuations, as well as moderately varying working hours. In contrast, both the hours and income variation are the least recorded in Upwork which suggests a more predictable working arrangement and compensation system, presumably related to contractual freelance jobs.

4.4 Case Comparisons: Uber, Upwork, Deliveroo

In order to describe the differences between platform models, we outline three examples, Uber, Upwork, and Deliveroo. They are two separate parts of the gig economy ride-hailing, freelance digital work, and food delivery that provide their own reflections on the nature of how the design of platforms influences the state of labor. Comparing these platforms we will be able to see the differences in income potential, working hours, flexibility, and stability that reflect the diversity of the experience of workers on the digital job market.

To further explain the diversity of labor processes of the digital platform, it is productive to make parallels between the field of ride-hailing (Uber), freelance digital work (Upwork), or food delivery (Deliveroo). The three cases prove that the type of platform model on-demand transport, online freelancing or food delivery dictates not only the working hours and the income, but the degree of flexibility, stability and predictability of the workers. Although Uber and Deliveroo are very dependent on an immediate demand and experience high changes, Upwork is inclined to provide more systematic contracts with more pronounced expectations and higher revenue per hour.

Table 3: Comparative Table.

Platform	Typical Work Hours (avg)	Average Income ($/month)	Hourly Stability	Flexibility Level	Main Strength	Main Challenge
Uber	~35 hours	~$738	Medium	High	Access to steady demand for rides	Strong income variability, demand-driven
Upwork	~39 hours	~$967	High	Medium	Higher pay rates, specialized tasks	Access to clients may be inconsistent
Deliveroo	~32–36 hours*	~$550–600*	Low–Medium	High	Entry-level access, easy onboarding	Very low pay rates, unstable schedules

The comparative Table 3 highlights the contrasts between **Uber, Upwork, and Deliveroo** in terms of work conditions and outcomes. **Uber** requires around 35 hours per month and offers medium income stability with high flexibility, but earnings remain highly dependent on demand fluctuations. **Upwork** involves slightly more hours (about 39) yet provides the **highest monthly income (~$967)** and greater stability, thanks to structured freelance contracts, though finding clients can be inconsistent. **Deliveroo**, by contrast, offers similar hours to Uber but yields the **lowest income (~$550–600)**, combining high flexibility with low stability, making it one of the least predictable and least profitable options. Overall, the table underscores how **platform type strongly influences worker experiences**, balancing trade-offs between flexibility, stability, and income potential.

5. Discussion

The findings of this study reveal that the **choice of platform significantly shapes work conditions and income**, often more than the number of hours worked, with delivery and ride-hailing services such as Uber and Deliveroo offering high flexibility but exposing workers to unstable schedules and volatile earnings, while freelance marketplaces like Upwork provide more predictable arrangements and higher income potential, though access to clients remains uneven. These results have important **implications for labor markets and policy**, as the restructuring of work into fragmented and on-demand models raises questions of fairness and sustainability, highlighting the need for minimum earning guarantees, stronger social protections, and clearer contractual terms to balance flexibility with stability. In line with **prior research**, our findings confirm the dual nature of gig work, where opportunities for autonomy coexist with heightened precarity, and further emphasize that variability in outcomes is strongly platform-dependent, challenging the idea of treating the gig economy as a homogeneous labor sector. At the same time, the analysis raises key **ethical and social considerations**, including gendered patterns of participation that risk reinforcing occupational segregation, the impact of unpredictable work on workers' mental health and financial security, and the broader issue of algorithmic management that can obscure accountability and exacerbate vulnerability. Taken together, these insights suggest that while digital platforms are reshaping labor markets in profound ways, ensuring **fairness, protection, and inclusivity** will require coordinated efforts from policymakers, researchers, and the platforms themselves.

6. Conclusion

This study has provided new insights into how different types of digital labor platforms ride-hailing, food delivery, and freelance marketplaces shape workers' experiences, incomes, and conditions. By comparing cases such as Uber, Deliveroo, and Upwork, we have shown that platform choice strongly influences outcomes, with freelance platforms offering higher and more predictable income, while delivery and ride-hailing platforms emphasize flexibility but expose workers to greater instability. A key contribution of this work is the emphasis on variability of hours and earnings as a measure of labor flexibility, highlighting the trade-offs that workers face in balancing autonomy with stability.

From a policy and practical perspective, the findings suggest the need to implement minimum earning guarantees, stronger social protections, and clearer contractual terms, particularly for workers in delivery and ride-hailing sectors where volatility is most pronounced. At the same time, freelancing platforms require mechanisms to ensure fair access to clients and prevent concentration of opportunities among a limited pool of workers. Policymakers, platform designers, and worker associations should work together to ensure that digital labor markets promote both inclusivity and fairness.

However, this study is not without limitations. The dataset used is relatively small and illustrative, which constrains the generalizability of results. The analysis also focused on a limited number of platforms, leaving out other important actors in the gig economy. Furthermore, while we explored hours, income, and gender distribution, other relevant factors such as geographic variation, worker motivations, or long-term career trajectories were not addressed.

Looking ahead, future research should expand to larger and more representative datasets, integrate qualitative insights from workers themselves, and explore the role of algorithmic management, worker organization, and global inequalities in shaping digital labor markets.

Comparative studies across countries would also help capture how institutional and regulatory environments influence platform dynamics. Such efforts will be crucial to better inform policy and design fairer, more sustainable digital labor ecosystems.

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